

G. PUBLIC SAFETY

This section and the preceding Section 4.F. *Public Health*, make up the typical CEQA analysis area known as Hazards and Hazardous Materials which has been separated into two sections in this EIR for clarity and ease of understanding purposes. This section evaluates impacts to public safety that could result from potential accidents related to subsurface gas storage. While the Public Health section discusses health impacts that could result from exposure to toxic gases, this section addresses potential accidental releases of methane gases in quantities sufficient to result in fires or explosions that could cause injury, or the accidental release of hydrogen sulfide (H₂S) gas, an acutely hazardous substance, that could cause adverse impacts. Measurements of these gases have been conducted in the vicinity of and at the lots proposed for sale.

ENVIRONMENTAL SETTING

PDR is primarily a residential community with some commercial uses; while MDR is a beach, harbor, and tourist-oriented community. The lots are found in 12 clusters of adjacent properties. Eleven of the clusters (containing 34 lots) are located in the PDR area and 1 cluster (comprised of 2 lots) is located in MDR. Each cluster is undeveloped; however subsurface materials were historically used for oil production and more recently for gas storage reservoir operations.

Leaks have occurred in the past at or near the wells located in the PDR Gas Storage Facility area, and gas leaks that have been measured in the past are summarized in **Table 4.G-1**.

Leaks and surface seepage have been documented in 11 wells in the general PDR and MDR area. Information on these wells and their respective leaks are summarized in **Table 4.G-1**. Of the 11 wells with documented leaks, four are located on the lots proposed for sale: 29-1, Lor Mar 1, Joyce 1 and Troxel 1. Casing leaks in each of the four wells has been repaired. As indicated on **Table 3-1**, Lor Mar 1, Joyce 1, 29-1 and Troxel 1 were plugged and abandoned in 1992, 1993, 1994, and 1994, respectively. There have been no reported leaks in the other eight wells included in the proposed sale.

UPDATED SITE INVESTIGATION

In 2003, an updated site investigation was conducted to supplement previous methane measurements and to fully examine existing conditions at the lots proposed for sale (Methane Specialists, 2004). The investigation involved surface sweeps at the project lots to detect the presence of methane and to establish locations for installing probes in the ground to measure methane in soil gas.

A surface sweep is a method for measuring combustible vapors which may be emitted from the ground surface. The technique utilizes a sensitive portable gas detector, called a flame ionization detector (FID) to detecting methane. The FID is capable of measuring methane concentrations as low as several parts per million. To perform the surface sweep, the FID is attached to a measuring wheel, and is moved slowly in a serpentine path across each of the 12 Clusters. When

**TABLE 4.G-1
SUMMARY OF PAST LEAKS DETECTED IN THE AREA**

Well Name	Problem	Depth (ft bgs)	Year Detected	Well Location
Well No. 29-1	Stage collar leak	723	1959	Between Falmouth Avenue & Calabar Avenue, south of intersection with Cabora Drive
Big Ben 1	Casing leak	150	1964	Between 79th Street & Veraqua Drive, northeast Zayenta Drive
	Surface seepage		1991	
Blackline 1	Casing leak	1,064	1969	South of Cabora Drive, west of Veraqua Drive and Zayenta Drive intersection
	Casing leak	1,060	1986	
SoCal No. 4	Casing leak	3,216	1971	NW of Cabora Drive, about 1,000 ft. NE of intersection with Falmouth Avenue ^a
SoCal No. 3	Casing leak	3,300	1972	NW of Cabora Drive, about 1,000 ft. NE of intersection with Falmouth Avenue ^a
	Casing leak	3,300	1975	
	Casing leak	2,109	1977	
Well No. 12-1	Surface seepage	481	1974	Southeast of 81st Street, north of intersection with 83rd Street
	Casing leak	210	1979	
Well No. 24-2	Surface seepage	191	1975	Northwest of 79th Street, west of Zayanta Drive
Pomoc 1	Casing leak	2,815	1975	West of Zayanta Drive, between 79th St and Cabora Drive
Joyce 1	Casing leak	750	1987	Northwest of 82nd Street, east of Saran Drive
Lor Mar 1	Casing leak	720	1981	South of 83rd Street, east of Saran Drive
Troxel 1	Marsh Gas Bubbles	<1000	1994	Union Jack Street and between Speedway Avenue and Venice Beach

^a Surface location of directionally drilled well. Bottom hole locations were not made available.

SOURCE: DOGGR

conducting the surface sweep, more attention was taken in areas where underground gas would tend to exit the surface, such as at vaults or cracks in the ground. Because the entire cluster is systematically covered, the surface sweep method is a good predictor of potential methane hazard at a cluster (Methane Specialists, 2004).

Surface sweep measurements are intended to identify any flow of gas from the surface of the ground. Finding such “advective” flow is a good indicator of potential pressurized flow of undiluted gas in the soil. The absence of such findings would suggest that there were no gross pressure flow phenomena were present at the time of monitoring. Surface sweep measurements taken on the 12 Clusters indicate that methane gas was not detected at any of the 36 lots (Methane Specialists, 2004).

SOIL GAS MONITORING

In conjunction with the environmental drilling and site investigation program of each of the 36 sites, methane measuring probes were installed to determine what gases were present in the soil¹ (Brown and Caldwell, 2004). Measurements were taken over an eight-month period, including methane and H₂S measurements, at shallow and deep probes at each site. H₂S was not found at any location at any time. With the exception of Cluster 11 and a single low methane reading at Cluster 12, methane was not detected².

Elevated levels of methane in the soil gas were consistently found at Cluster 11. Methane readings ranged from 11.5 to 35 percent³, which are above the lower explosive limit (LEL) of 5 percent. The LEL (also called the lower flammable limit, LFL) is defined by OSHA as the lowest concentration level above which a gas could sustain combustion if an ignition source were present.

A helium sample was taken from Cluster 11 for laboratory analyses to determine the signature of the observed methane. An isotope analysis of the helium sample was carried out to determine the origin of the gas (i.e., is it biogenic, thermogenic, or storage gas). Stable isotopes of helium are H³ (atomic weight three) and H⁴ (atomic weight four), and the ratios of these isotopes in the measurements would confirm the source of the detected gas, since gases of different origins have distinct isotopic “signature” ratios. The helium isotope analysis confirmed that the origin of the gas found at the Cluster 11 was not the same as storage gas, but more likely is a residual gas that is present naturally (mostly thermogenic) from the decomposition of contaminated soils from historical oil exploration activities (Methane Specialists, 2004).

At the Cluster 12 site, a single methane reading of 2.2 percent by volume was detected in July 2003 during installation of a borehole on site. However, subsequent samplings at the same location failed to detect any further elevated levels of methane at Cluster 12 (Methane Specialists, 2004). Because no further methane readings were observed at Cluster 12, it was not possible to conduct a helium isotope analysis of the single Cluster 12 methane reading. In January 2004, Brown and Caldwell conducted a deep boring at Cluster 12 (Troxel) to determine if a geologic formation known as the “fifty-foot gravel layer” exists under the Troxel site (Brown and

¹ Referred to here as soil gas.

² At the Cluster 12 site, a single methane reading of 2.2 percent by volume was detected in July 2003 during installation of a borehole on site. However, subsequent samplings at the same location failed to detect any further elevated levels of methane at Cluster 12 (Methane Specialists, 2004).

³ Methane readings are expressed here as percent of total sample volume. For example, a sample containing five percent methane would contain 95 percent other atmospheric gases, such as oxygen, nitrogen etc.

Caldwell, 2004). As Cluster 12 is located at near sea level and this gravel layer had been found under much of Playa Vista (located about a mile north of the PDR lots and several miles east of Cluster 12) there was a potential for this layer to exit under Cluster 12. The layer was named because it was first detected at an elevation of fifty feet below mean sea level and is described in more detail in Section 4.E, *Geology and Soils*. At Playa Vista, this fifty-foot gravel layer contained free soil gas in several discreet areas and dissolved methane in groundwater throughout. The deep boring was advanced to a depth of 60 feet below ground surface (bgs) and no evidence of the 50-foot gravel layer was noted. A very tight clay layer was detected from 55 to 60 feet bgs⁴, likely minimizing the vertical migration of groundwater or gases (such as methane) in the area (Brown and Caldwell, 2004).

APPLICABLE REGULATIONS, PLANS, AND POLICIES

Federal and state laws require planning to ensure that hazardous materials are properly used, stored, and disposed of, and in the event that such materials are accidentally released, to prevent or to reduce injuries to human health, safety, or the environment.

FEDERAL

U.S. Occupational Safety and Health Administration Process Safety Management Rule.

To assure safe and healthful workplaces, the U.S. Occupational Safety and Health Administration (OSHA) has issued the Process Safety Management (PSM) of Highly Hazardous Chemicals standard (1910.119). This standard contains requirements for the management of hazards associated with processes using highly hazardous chemicals. OSHA's standard also establishes a comprehensive management program that integrates technologies, procedures, and management practices.

STATE AND LOCAL

California OSHA Injury and Illness Prevention Program

In California every employer is required by law (Labor Code Section) to provide a safe and healthful workplace for employees. Title 8 of the California Code of Regulations (CCR) requires every California employer to have an effective Injury and Illness Prevention Program in accordance with Title 8, CCR Section 3203, of the General Industry Safety Orders.

California Health and Safety Code Section 25534

Section 25534 of the California Health and Safety Code requires businesses that handle amounts of acutely hazardous materials (AHMs) in excess of certain quantities to develop a risk management plan (RMP). The RMP encompasses process hazards, potential consequences of releases, and documentation, auditing, and training relating to the AHMs that are above specified threshold quantities at the generating station. Regulated AHMs may include aqueous ammonia and sulfuric acid, as well as other acutely hazardous substances.

⁴ Boring was stopped at 60 feet bgs and the additional depth of the clay layer is unknown.

California Department of Conservation, Division of Oil, Gas and Geothermal Resources and CPUC

Physical hazards and storage field maintenance and operations within the PDR Gas Storage Facility are under the jurisdiction of the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) and the CPUC. DOGGR regulates the operations and maintenance of natural gas storage fields and aboveground piping is regulated by the CPUC.

Well Abandonment Regulations and Policies

DOGGR has adopted regulations for well abandonment to ensure that it is done safely and effectively. These regulations provide well abandonment procedures that prevent future migration of oil or gas from the producing zone and the upper zones, as well as protect groundwater. Furthermore, DOGGR is charged with ensuring public safety. DOGGR has the expertise and authority to require whatever steps are deemed necessary to protect public safety. Well abandonment is discussed in more detail in Section 4.E, *Geology and Soils*.

Regulations Regarding Construction of Buildings over Abandoned Wells

The City of Los Angeles has recently adopted a new and more stringent code for construction in areas prone to methane gas generation. The new code expands the official methane zone from the older, more limited Fairfax Area to now include all lands in the city overlying oil fields, plus a substantial buffer zone around the oil fields. The City code describes required mitigation measures for all structures in potential soil gas areas, whether gas is present or not. For areas where gas is present, additional measures are required, including soil gas venting, constructing barriers to interrupt gas migration pathways, and, in cases where gas is present, monitoring gas in the soil and at structures.

The Los Angeles City Fire Department requires electronic gas detectors, mechanical ventilation, alarms, and warning signs to be placed areas where methane gas is known to be present. The Fire Department must approve specifications on gas detection equipment and all plans for the placement of gas detectors.

SIGNIFICANCE CRITERIA

According to Appendix G of the CEQA Guidelines, the project would have a potentially significant impact if it would:

- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous or flammable materials into the environment
- Emit acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

ENVIRONMENTAL IMPACTS AND MITIGATION

Impact G.1: Future construction and occupation of the lots proposed for sale could result in an explosion or in exposure to acutely hazardous substances. (Less than significant)

The field study, conducted by Methane Specialists and described above in the Setting, did not detect methane at Clusters 1 through 10 in PDR and Cluster 12 in MDR⁵ (Methane Specialists, 2004). Because the highest measured soil gas levels at these sites are presently less than detection limits (a few parts per million), it is unlikely that soil gas will ever be present in concentrations that are considered unsafe at the sites in these clusters. Due to strict DOGGR requirements for well abandonment the wells on the project lots were vented prior to abandonment, thereby preventing unsafe levels of gas buildup.

Methane gas was detected at Cluster 11 at levels up to 35 percent by volume. Helium isotope analysis of the soil gas did not show evidence of storage gas; rather, the measured gas was naturally-occurring gas. The helium isotope analysis indicated that the gas was formed locally. Based on field monitoring program data, there are no signs of advective gas flow caused by releases from stored gas reserves, at Cluster 11. Because it is unlikely that concentrations of methane could reach the LEL (five percent methane), in the absence of advective gas flow, the explosion hazard would be minimal. With compliance with DOGGR and City of Los Angeles requirements, conditions suggest that any housing units on the Cluster 11 properties would not be adversely impacted by a methane hazard. Therefore, in addition to Clusters 1-10 and 12, public safety impacts at Cluster 11 would be less than significant.

Mitigation: None required because the City of Los Angeles Building Code requires that methane mitigation be implemented when construction occurs at these sites to ensure public safety. These measures include the installation of membrane barriers and vent piping as well as trench dams and electrical seal offs for each of these properties. Since these measures would already be required by City regulation, no additional mitigation measures are required.

Impact G.2: Future development of the 36 lots proposed for sale could result in the release of acutely hazardous substances resulting in unsafe levels at nearby schools. (Less than significant)

The PDR lots are located less than 0.25 miles from at least one of three local schools (Westchester High School, Paseo del Rey Elementary School, or St. Bernard High School). As discussed in Impact G.1, under worst case conditions, structures built directly on the properties would not be adversely affected by methane, and the impacts at these worst-case locations would be less-than-significant. Therefore, for locations farther from the clusters, such as the schools, the impacts would be less than significant.

⁵ At the Cluster 12 site, a single methane reading of 2.2 percent by volume was detected in July 2003 during installation of a borehole on site. However, subsequent samplings at the same location failed to detect any further elevated levels of methane at Cluster 12 (Methane Specialists, 2004).

Mitigation: None required.

Impact G.3: Future development of the 36 lots proposed for sale could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than significant)

SCG has an existing emergency response plan for the PDR Gas Storage Facility and associated pipelines. Because the sale of the 36 lots would not result in any physical changes to SCG's existing operations, this plan would remain in effect. Because SCG would no longer own the lots proposed for sale, these lots would no longer be part of the plan; however, it is unlikely that accidental releases at the 36 lots would occur. In addition, the 36 lots are located in already-developed neighborhoods and future development of the lots would not likely interfere with existing emergency response plans or emergency access in the project area. Construction activities associated with future development of the 36 lots would be subject to local CEQA review and implementation of any mitigation measures that might be required to eliminate potential impacts to local emergency response plans and emergency access.

Mitigation: None required.

CUMULATIVE IMPACTS

Impact G.4: Cumulative development projects in the area, along with the future development of the 36 lots proposed for sale could result in the storage or release of flammable or acutely hazardous substances that could impact the public. (Less than significant)

Future cumulative development, described in the Chapter 3, *Project Description*, identifies new residences or light commercial development that might occur in the area in the future. None of this future development would include facilities that store or use acutely hazardous substances which could impact public safety. In addition, construction and occupation of facilities would be subject to the same regulations as the future development of the 36 lots, as described in Impact G.1, above, which would prevent the migration of underground gases maintaining public safety. Compliance with DOGGR and City regulations would either prevent or minimize cumulative impacts to public safety.

Mitigation: None required because existing DOGGR and City of Los Angeles regulations already contain mitigation measures that must be implemented prior to development. Since these measures are required, they are not considered as mitigation measures under CEQA.

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